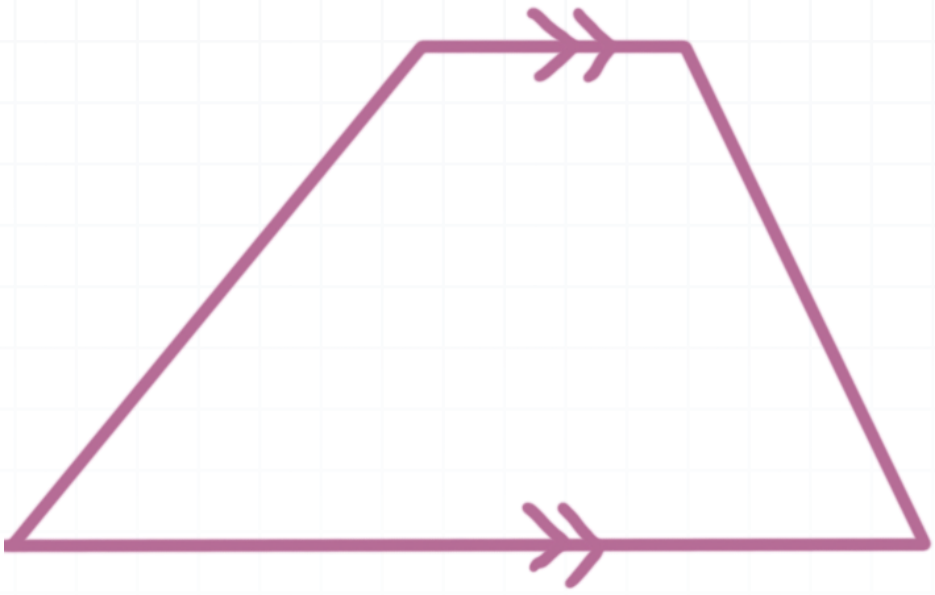
Area of a trapezoid

In this lesson we'll look at how to find the area of a trapezoid. A trapezoid is a quadrilateral with exactly one pair of opposite parallel sides.



Area of a trapezoid

The area of a trapezoid is given by

$$A = \frac{1}{2}(b_1 + b_2)h$$

where b_1 and b_2 are the lengths of the parallel bases, and h is the height of the trapezoid (which is perpendicular to the parallel bases). Sometimes you'll need to draw in the height.

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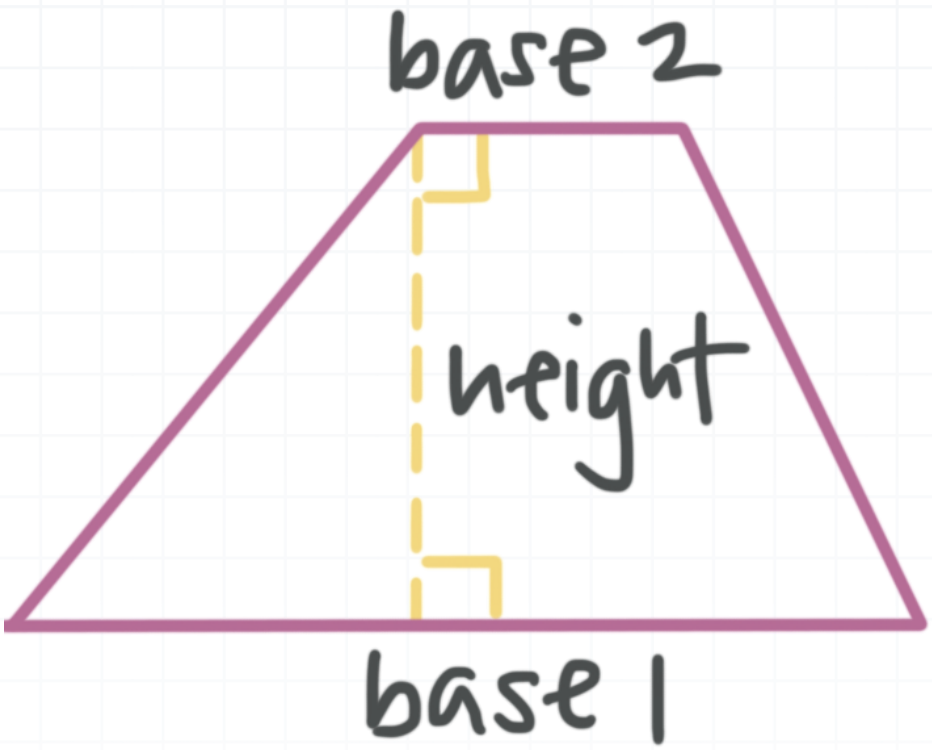
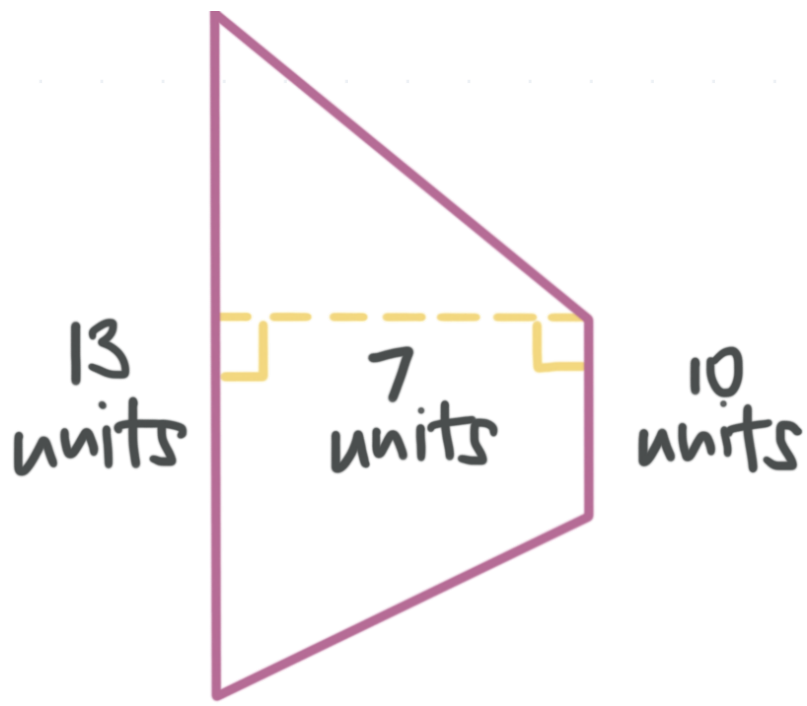


The area of a trapezoid is always given in units^2. Let's start by working through an example.

Example

What is the area of the trapezoid?



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The bases of a trapezoid are the parallel sides, so this trapezoid has bases of 13 units and 10 units.

The height of a trapezoid is the length that's perpendicular to both bases, so this trapezoid has a height of 7 units.

$$A = \frac{1}{2}(b_1 + b_2)h$$

$$A = \frac{1}{2}(13 + 10)(7)$$

$$A = 80.5 \text{ units}^2$$

Let's do one more example.

Example

What is the area of the trapezoid in square units?

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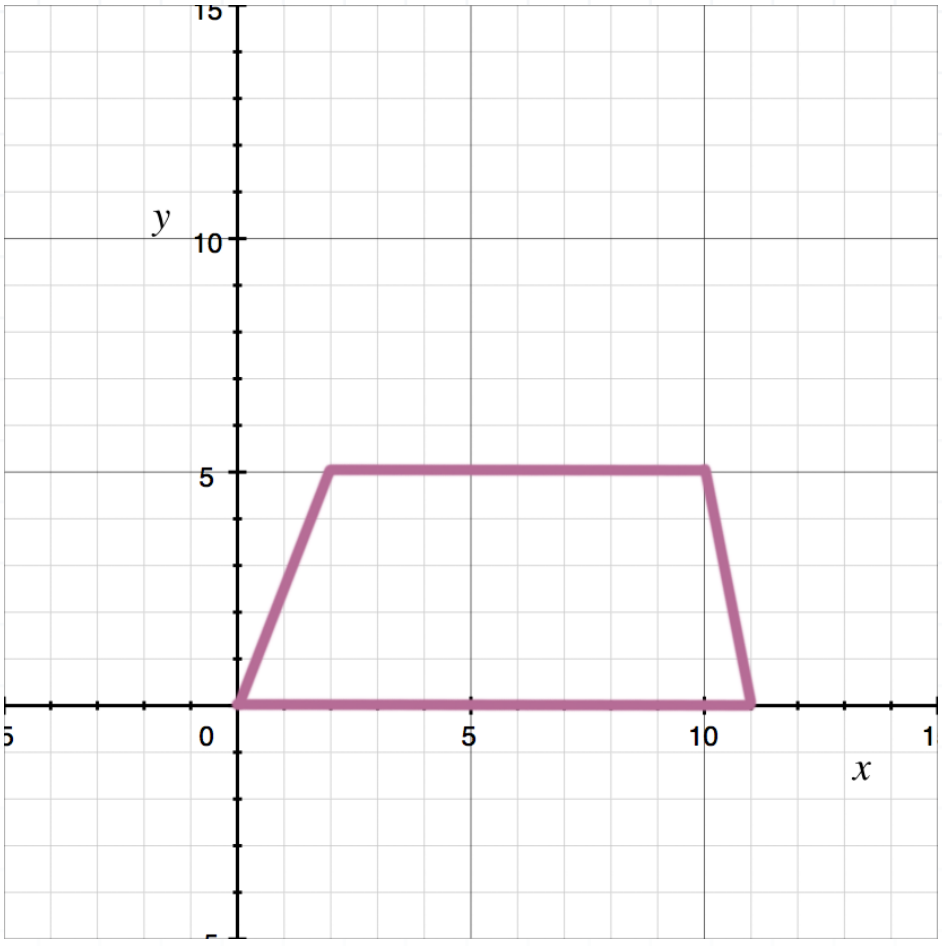
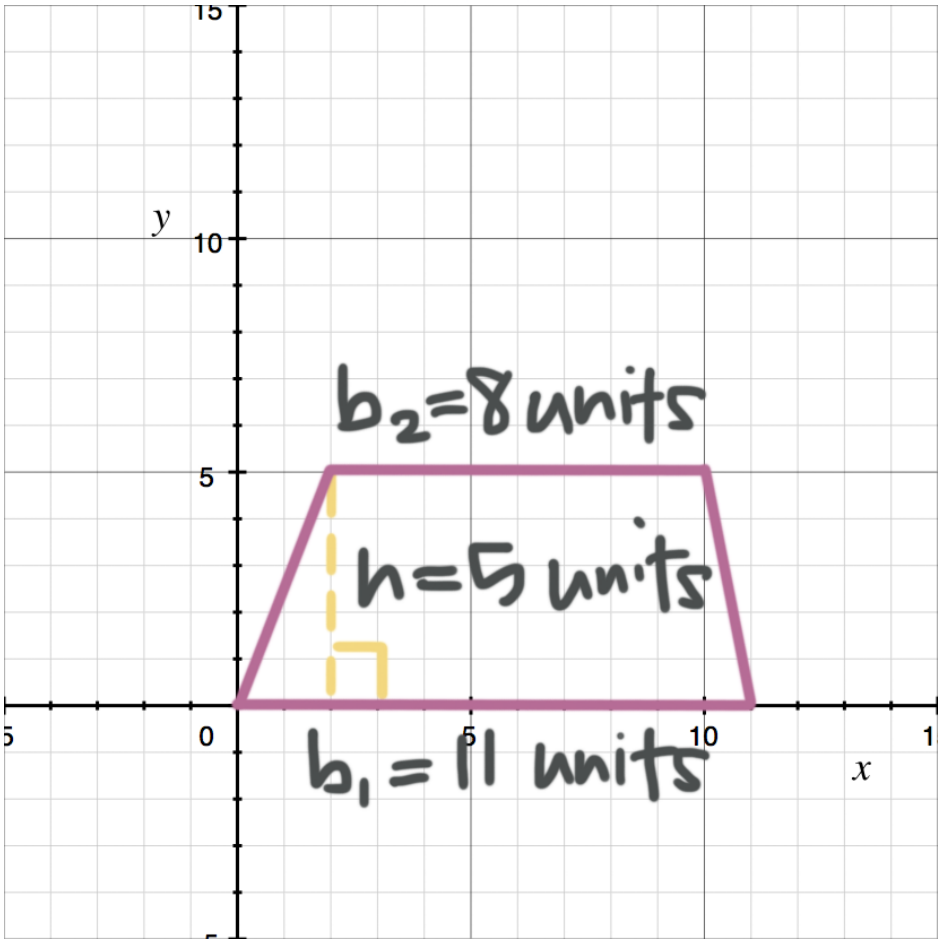


Use the grid to count the length of the bases and find the height.



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Now use the formula for the area of a trapezoid.

$$A = \frac{1}{2}(b_1 + b_2)h$$

$$A = \frac{1}{2}(11 + 8)5$$

$$A = 47.5 \text{ units}^2$$

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